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ABSTRACT

This experiment was designed to test the motivation to perform a task for males and females in mixed and same-sex groups. Individuals in homogeneous groups (four males or four females) or heterogeneous groups (two males and two females) clapped their hands alone, in pairs and in foursomes. People exerted more effort alone than in groups, regardless of group compositions. Females performed better in same-sex pairs than in opposite-sex pairs. Implications concerning relative abilities and social loafing are discussed. (Author)

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The effects of sexual composition and group size on individual effort

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Over 50 years ago, a man named Ringelmann, whose first name has since been lost to humanity, assembled German workers together on a rope in various sized groups. Not too surprisingly, he found that as the group size increased, the total output for the group increased. However, this total increase in output did not grow as fast as did the group size. In other words, it seemed as though individuals were performing less in groups than when they were alone.

Steiner (1972) reinterpreted this finding in terms of coordination losses. He hypothesized that in a rope pulling task group members were pulling in slightly different directions and at slightly different times. As the group size increased, the coordination links between each individual increased.

Ingham, Levinger, Pecklam and Graves (1974) eliminated the possibility of coordination losses by assembling "pseudo groups". The experiment was set up so that the participant perceived himself to be pulling on the rope in various sized groups, when actually he was pulling alone. The results showed that individuals exert less effort in groups.

The present experiment is part of a program of research primarily using sound production as its dependent measure of effort. Individuals have been brought into the lab and asked to shout or shake maracas in different sized groups, some being "pseudo groups". All of this research has shown that individual effort decreases in groups. We call this decreased effort "social loafing". Another relevent finding from this

program was that in other sound production tasks males produce more sound than females.

The purpose of the present experiment was to replicate the social loafing effect in a new task - clapping. Second, we were interested in whether the ability of an individual's partner affects his or her output. Specifically, we wanted to see if a person would loaf more if they had a high ability partner. Ability, in this study, was manipulated by the sex of partner. It was reasoned that males would not only clap louder, but that they would be seen as being able to clap louder.

Ninety-six individuals were brought into the laboratory in groups of four, either four males, four females, or heterogeneous groups of two males and two females. The heterogeneous groups were divided in two, with half being seated in same-sex pairs and half being seated in opposite-sex pairs. All subjects wore blindfolds and headsets under the pretense that we were interested in the reduction of sensory feedback on clapping. It was actually done to remove the possibility that people's clapping would affect the other people's clapping. The subjects were told to clap as loud as they could on every trial. Each trial lasted approximately five seconds.

Instructions about who was supposed to clap, and when, came over the headsets from a prerecorded tape. During each clapping trial a masking noise of people clapping was played over the headsets to drown out the actual clapping. The tape had two tracks so at any given time an individual could be switched to the second track and hear a different set of instructions. In this way we could produce our pseudo groups. For example, subject A could be switched to the second track and hear the instruction "A and B", while everyone else was hearing "A alone".

Subject A would then be the only person clapping, but he or she would think they were in a pair. Actual groups were also run in which pairs and foursomes actually did perform together.

Four trial blocks of 24 trials each were run for each group. Measures of actual groups consisted of 8 trials alone, 8 trials in pairs, and 16 trials in foursomes, for each subject. Pseudo-groups consisted of 8 trials alone-- which were the same 8 trials used for the actual groups, since you can't have a pseudo group of size one-- 8 pseudo trials in pairs, and 8 pseudo trials in foursomes. Subjects were given questionnaires and debriefed.

Loudness was measured with a General Radio Sound-Level Meter on C scale and slow time constant, placed four meters from everyone. Subjects were shown the sound-level meter prior to clapping and shown that it gets only one reading for the sound being produced at any given time. They were told that this meant that when they were performing in pairs or foursomes, we could not tell how much any one person was performing, only the total amount produced by the group. They were also told that we could, of course, measure how much they produced when they performed alone. The sound level meter reads sound in decibels, which is a log scale, so a log transformation was performed on the data, transforming it into dynes per cm^2.

A 4 X 3 analysis of variance was performed on the actual groups data, using group characteristics and size as its factors. A main effect for size was significant, with individuals producing more sound in alone conditions than in group conditions.

A 6 X 4 X 3 of variance was performed on the pseudo-groups data, using group characteristics (separating out the males and females in the heterogeneous groups), trial block, and size as its factors. A main effect

for size was significant, again with individuals producing more sound alone than in groups.

Comparing these two effects allows us to separate off the amount of the effect that is due to coordination losses and the amount of the effect that is due to social loafing (see Figure 1).

Also, on the pseudo-groups analysis a main effect for group characteristics was significant. Planned comparisons revealed a significant male-female difference, with males producing more sound than females. Also, there was a significant difference between females in same-sex pairs and females in opposite-sex pairs, with the females in same sex pairs producing more sound (see Figure 2).

Finally, on the questionnaire, the manipulation check for perceived ability proved significant. Subjects felt males had a greater ability to clap than females.

First of all, this experiment replicated the group size social loafing effect for a new task, clapping. Again, individuals exert less effort in groups than when alone.

Second, this experiment provides some support for the hypothesis that the ability of a partner affects the performance of an individual. Females in same-sex pairs (with another female) performed more than females in opposite-sex pairs (with a high ability male). In other words females loafed more when they had a high ability partner.

In general, applied setting, where the maximum output of a group is desired, this experiment suggests that ability differences should not be made salient. This is evident because females in opposite-sex pairs loafed and let the high ability partner take up the slack. However, the males in those same opposite-sex pairs did not increase their output to take up the slack. The whole group, then, exerted less effort overall.

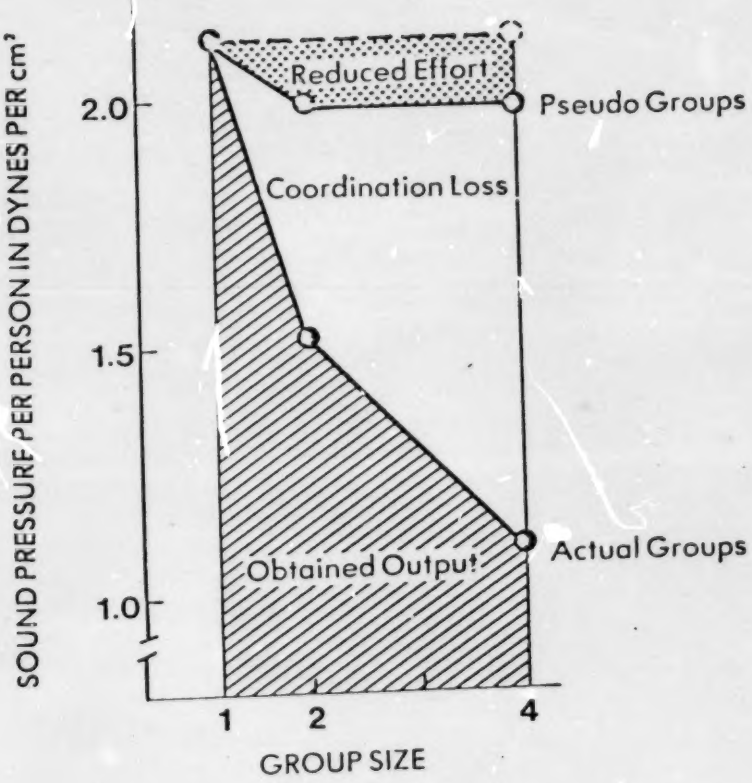

Figure 1. Sound pressure produced by people clapping as a function of group size and coordination loss.

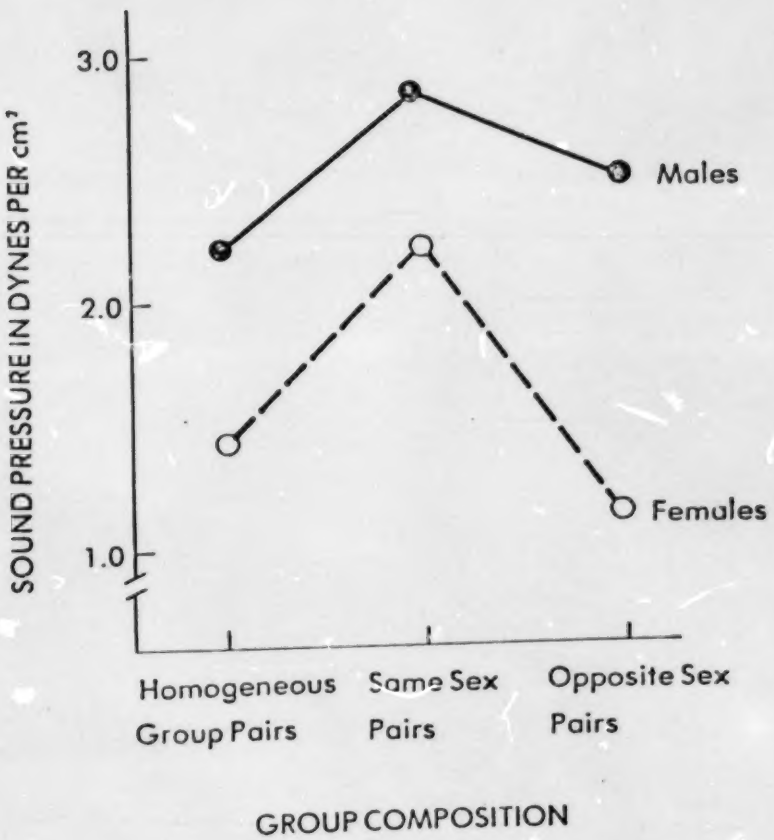

Figure 2. Sound pressure produced by people clapping in various group compositions.